

CLAIMS

WHAT IS CLAIMED IS:

1. A multi-axis chuck comprising:
a first portion including a substrate receiving surface, the substrate receiving
5 surface rotatable about a cutting region;
a second portion operatively coupled to the first portion; and
a third portion operatively coupled to the second portion;
wherein the first portion is rotatable substantially about a first axis and the second
portion is rotatable substantially about a second axis.
- 10 2. The multi-axis chuck of claim 1, further comprising:
a first degree scale that indicates a number of degrees of rotation of the first
portion about the cutting region; and
a first degree indicator that indicates on the first degree scale a number of degrees
of rotation of the first portion about the cutting region.
- 15 3. The multi-axis chuck of claim 2, wherein the first degree scale is located
on the second portion and the first degree indicator is located on the first portion.
4. The multi-axis chuck of claim 2, further comprising:
a second degree scale that indicates a number of degrees of rotation of the first
portion and the second portion about the cutting region; and
20 a second degree indicator that indicates on the second degree scale a number of
degrees of rotation of the first portion and the second portion about the cutting region.

5. The multi-axis chuck of claim 4, wherein the second degree scale is located on the third portion and the second degree indicator is located on the second portion.

6. The multi-axis chuck of claim 1, further comprising:

5 a first mating portion located along at least part of a second plane of the first portion that is substantially parallel to the first axis; and

a second mating portion located along at least a part of one side of the second portion that is substantially parallel to the first axis, wherein the first mating portion mates with the second mating portion.

10 7. The multi-axis chuck of claim 6, wherein the first mating portion comprises a protruding curved track and the second mating portion comprises a recessed curved track.

8. The multi-axis chuck of claim 6, further comprising:

15 a third mating portion located along at least part of a second side of the second portion that is parallel to the second axis; and

a fourth mating portion located along at least part of one side of the third portion that is parallel to the second axis, wherein the third mating portion mates with the fourth mating portion.

20 9. The multi-axis chuck of claim 8, wherein the third mating portion comprises a protruding curved track and the fourth mating portion comprises a recessed curved track.

10. The multi-axis chuck of claim 1, wherein the cutting region is located substantially at a cutting plane of the multi-axis chuck.

11. The multi-axis chuck of claim 1, further comprising at least one motor that rotates the first portion and the second portion about the cutting region.

12. The multi-axis chuck of claim 11, further comprising at least one sensor that senses at least one position of the first portion and the second portion.

5 13. The multi-axis chuck of claim 12, further comprising a controller that enables a user to rotate the first portion and the second portion about the cutting region using the at least one motor.

14. The multi-axis chuck of claim 13, wherein the controller stores a zero position for the first portion and the second portion and rotates the first portion and the
10 second portion until the at least one sensor senses the zero position upon receiving a zero position command from the user.

15. The multi-axis chuck of claim 14, wherein the controller stores at least one position for the first portion and the second portion.

16. The multi-axis chuck of claim 13, wherein the controller enables the user
15 to return the first portion and the second portion to the at least one position.

17. The multi-axis chuck of claim 14, further comprising a locking mechanism that locks the first portion and the second portion in the at least one position.

18. The multi-axis chuck of claim 17, wherein the locking mechanism comprises a permanent magnet solenoid.

20 19. The multi-axis chuck of claim 1, wherein the substrate comprises a tissue specimen.

20. The multi-axis chuck of claim 1, wherein the cutting region consists of a point substantially on the cutting region.

21. The multi-axis chuck of claim 1, wherein the first axis is substantially perpendicular to the second axis.

22. The multi-axis chuck of claim 1, wherein the first axis and the second axis intersect at a substantially fixed location adjacent the substrate receiving surface.

5 23. The multi-axis chuck of claim 1, wherein the first axis and the second axis intersect at a substantially fixed location on the substrate receiving surface.

24. A method for positioning a multi-axis chuck comprising the steps of:
receiving a signal to rotate a multi-axis chuck to a first position;
rotating the multi-axis chuck to a second position;
10 comparing the second position to the first position; and
re-positioning the multi-axis chuck if a determination is made that the second position is not at the first position.

25. The method of claim 24, wherein the step of rotating comprises using at least one motor.

15 26. The method of claim 25, wherein the at least one motor is controlled by a user using a controller.

27. The method of claim 26, wherein the step of comparing uses at least one sensor in communication with the controller.

28. A system for positioning a multi-axis chuck comprising:
20 a multi-axis chuck;
at least one motor operatively coupled to the multi-axis chuck for positioning the multi-axis chuck;

a controller operatively coupled to the at least one motor that enables a user to position the multi-axis chuck using the at least one motor; and

at least one sensor operatively coupled to the at least one motor and the controller for sensing a position of the multi-axis chuck.